

APPLICATION

FOR

UNITED STATES LETTERS PATENT

TO ALL WHOM IT MAY CONCERN;

BE IT KNOWN THAT I, **PETER YANG**, a citizen of the United States, have
invented new and useful improvements in a

FULL-SIZE FOLDING MIRROR AND CARRY CASE APPARATUS

of which the following is a specification:

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FULL-SIZE FOLDING MIRROR AND CARRY CASE APPARATUS

BACKGROUND OF THE INVENTION

Cross-Reference to Related Application

This application claims priority based upon my copending Provisional Application Serial No. 60/394,743; filed July 11, 2002.

Field of the Invention

The present invention relates generally to mirrors and, more particularly, to mirrors that are portable and that are especially adapted for being folded up and carried when not in use.

10 Description of the Prior Art

Generally, it is well known to use portable mirrors that can be carried in a convenient device when not in use, such as in a pocket book, and removed from the carrying device and used when needed. Such mirrors have a relatively small reflective surface. In this respect, it would be desirable to provide a portable mirror which has a relatively large reflective surface.

There is a specific patent known in the prior art, U. S. Patent No. 4,397,526, which discloses a foldable mirror device which has two foldable mirror support structures which support a unitary reflective surface which is folded when the device is folded. As a result, the unitary reflective surface may

have fold line that will create distortion when in open position. To avoid the formation of a fold line, the flexible sheet generally when folded is allowed by the space 34 between the back up panels to assume a tear-drop shape 36 of a general diameter that depends on the thickness of the flexible sheet and material used. The fundamental reason why a fold line may be formed is due to the fact that the unitary reflective surface is itself folded during storage. To avoid this problem entirely, it would be desirable if a foldable mirror apparatus were provided in which the reflective surface itself is not folded when the foldable mirror is folded up.

10 The following U. S. patents may also be of interest for their disclosure of mirror devices: 5,222,000, 5,270,871, 5,997,146, and 6,113,242. Yet, none of these devices are foldable into more compact units for portability and transport when the mirror is not in use.

 Still other features would be desirable in a foldable mirror device. Not only would it be desirable for a foldable mirror to be relatively larger than a small portable mirror, it would be desirable if a foldable mirror were provided that folded out into a full-size mirror. Once the full-size mirror is unfolded, it would be desirable to be able to support the full-size mirror in a vertical orientation so that it can be easily used. In this respect, it would be desirable to be able to support the full-size mirror on a wall. In this respect, it would be desirable to be able to support the full-size mirror on a hook installed in a wall or other vertical surface. For walls or other vertical surfaces that don't have a

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hook installed therein, it would be desirable to be able to support the full-size mirror with suction cups on a wall or other vertical surface.

There may be times when it would not be convenient or desirable to support the full-size mirror on any vertical surface at all. At such a time, it would be desirable to be able to support the full-size mirror on the floor. Moreover, if the full-size mirror is supported on the floor, it would be desirable if a floor support is provided which is also foldable along with the foldable mirror.

Thus, while the foregoing body of prior art indicates it to be well known to use a foldable mirror, the prior art described above does not teach or suggest a full-size folding mirror and carry case apparatus which has the following combination of desirable features: (1) provides a portable mirror which has a relatively large reflective surface; (2) provides a reflective surface which is not folded when the foldable mirror is folded up; (3) provides a full-size mirror; (4) provides for supporting the full-size mirror in a vertical orientation; (5) provides for supporting the full-size mirror on a hook installed in a wall or other vertical surface; (6) provides for supporting the full-size mirror with suction cups on a wall or other vertical surface; (7) provides for supporting the full-size mirror on the floor; and (8) provides a floor support which is also foldable along with the foldable mirror. The foregoing desired characteristics are provided by the unique full-size folding mirror and carry case apparatus of the present invention as will be made apparent from the following description thereof. Other

advantages of the present invention over the prior art also will be rendered evident.

SUMMARY OF THE INVENTION

To achieve the foregoing and other advantages, the present invention, briefly described, provides a folding full length mirror and carry apparatus which includes a foldable reflective surface support assembly which includes support panels connected together with panel-interconnection hinges. A non-folded reflective surface assembly is supported by the foldable reflective surface support assembly. Preferably, a handle is connected to the foldable reflective surface support assembly. A shoulder strap can be connected to the foldable reflective surface support assembly. Preferably, a folded condition locking assembly is connected to the foldable reflective surface support assembly for retaining the apparatus in a folded up, carrying condition.

With one embodiment of the invention, the non-folded reflective surface assembly includes panel-mounted non-folded reflective surfaces mounted one side of each of the respective support panels.

The folded condition locking assembly includes a folded condition first locking member which is connected to one of the support panels. A folded condition second locking member is connected to another of the support panels, such that the foldable reflective surface support assembly is locked in the folded up, carrying condition.

With another embodiment of the invention, the non-folded reflective surface assembly includes a roller assembly housing which is connected to the foldable reflective surface support assembly. A roller assembly is retained in the roller assembly housing, and a reflective rollable (flexible) non-folded sheet is supported by the roller assembly.

The folded condition locking assembly includes a folded up first panel lock member which is connected to the roller assembly housing, and a folded up second panel lock member is connected to the foldable reflective surface support assembly.

10 An extended reflective rollable sheet locking assembly is connected between the reflective rollable non-folded sheet and the foldable reflective surface support assembly. Preferably, the extended reflective rollable sheet locking assembly includes a sheet-attached ring connected to a distal end of the reflective rollable non-folded sheet. A support-assembly-attached hook is connected to the foldable reflective surface support assembly. Also, suction cups can be connected to the foldable reflective surface support assembly. Either the hook or the suction cups can be used to support the apparatus in the fully unfolded condition on a wall surface.

20 With yet another embodiment of the invention, a horizontal-surface-supported mirror support member is provided, and interconnection means are provided for connecting the horizontal-surface-supported mirror support member

to a bottommost support panel. Preferably, the interconnection means include support-member-to-support-panel hinges.

A topmost support panel and a bottommost support panel can include a pair of longitudinal side portions. For each topmost and bottommost panel, a transverse portion and a pair of interconnection elbows are connected between the longitudinal side portions and the transverse portion. The bottommost interconnection elbows serve as feet members for the apparatus when the apparatus is supported on a floor or other horizontal surface.

10 The panel-interconnection hinges for successive support panels can be located on opposite sides of the successive support panels.

The above brief description sets forth rather broadly the more important features of the present invention in order that the detailed description thereof that follows may be better understood, and in order that the present contributions to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will be for the subject matter of the claims appended hereto.

20 In this respect, before explaining a number of preferred embodiments of the invention in detail, it is understood that the invention is not limited in its application to the details of the construction and to the arrangements of the components set forth in the following description or illustrated in the drawings.

The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood, that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

As such, those skilled in the art will appreciate that the conception, upon which disclosure is based, may readily be utilized as a basis for designing other structures, methods, and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

It is therefore an object of the present invention to provide a new and improved full-size folding mirror and carry case apparatus which has all of the advantages of the prior art and none of the disadvantages.

It is another object of the present invention to provide a new and improved full-size folding mirror and carry case apparatus which may be easily and efficiently manufactured and marketed.

It is a further object of the present invention to provide a new and improved full-size folding mirror and carry case apparatus which is of durable and reliable construction.

An even further object of the present invention is to provide a new and improved full-size folding mirror and carry case apparatus which is susceptible of a low cost of manufacture with regard to both materials and labor, and which accordingly is then susceptible of low prices of sale to the consuming public, thereby making such full-size folding mirror and carry case apparatus available to the buying public.

Still yet a further object of the present invention is to provide a new and improved full-size folding mirror and carry case apparatus which provides a portable mirror which has a relatively large reflective surface.

10 Still another object of the present invention is to provide a new and improved full-size folding mirror and carry case apparatus that provides a reflective surface which is not folded when the foldable mirror is folded up.

Yet another object of the present invention is to provide a new and improved full-size folding mirror and carry case apparatus which provides a full-size mirror.

Even another object of the present invention is to provide a new and improved full-size folding mirror and carry case apparatus that provides for supporting the full-size mirror in a vertical orientation.

Still a further object of the present invention is to provide a new and improved full-size folding mirror and carry case apparatus which provides for supporting the full-size mirror on a hook installed in a wall or other vertical surface.

Yet another object of the present invention is to provide a new and improved full-size folding mirror and carry case apparatus that provides for supporting the full-size mirror with suction cups on a wall or other vertical surface.

10 Still another object of the present invention is to provide a new and improved full-size folding mirror and carry case apparatus which provides for supporting the full-size mirror on the floor.

Yet another object of the present invention is to provide a new and improved full-size folding mirror and carry case apparatus that provides a floor support which is also foldable along with the foldable mirror.

These together with still other objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be had to the

accompanying drawings and descriptive matter in which there are illustrated preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood and the above objects as well as objects other than those set forth above will become more apparent after a study of the following detailed description thereof. Such description makes reference to the annexed drawing wherein:

Figure 1 is a perspective view showing a first embodiment of the full-size folding mirror and carry case apparatus of the invention in a folded up, carrying condition.

Figure 2 is a side view of the embodiment of the full-size folding mirror
10 and carry case apparatus shown in Figure 1 in the process of being unfolded.

Figure 3 is a front view of the embodiment of the full-size folding mirror and carry case apparatus of Figure 2 in the fully unfolded condition and hanging from a hook on a wall.

Figure 4 is a side view of the embodiment of the invention shown in Figure 3 taken along line 4-4 thereof.

Figure 5 is a perspective view showing a second embodiment of the full-size folding mirror and carry case apparatus of the invention in a folded up, carrying condition.

Figure 6 is a side view of the embodiment of the full-size folding mirror and carry case apparatus shown in Figure 5 in the process of being unfolded.

Figure 7 is a front view of the embodiment of the full-size folding mirror and carry case apparatus of Figure 6 in the fully unfolded condition and hanging from suction cups on wall.

Figure 8 is a side view of the embodiment of the invention shown in Figure 7 taken along line 8-8 thereof.

Figure 9 is a front view of a third embodiment of the full-size folding mirror and carry case apparatus in a fully unfolded condition, and which
10 includes a support assembly for supporting the apparatus on a floor or other horizontal surface.

Figure 10 is a side view of the embodiment of the invention shown in Figure 9 taken along line 10-10 thereof.

Figure 11 is an enlarged partial rear view of the embodiment of the invention shown in Figure 10 taken along line 11-11 thereof.

Figure 12 is a cross-sectional view of the embodiment of the invention shown in Figure 11 taken along line 12-12 thereof.

Figure 13 is an enlarged partial cross-sectional view of the embodiment of the invention shown in Figure 12 contained in circled region 13 thereof.

Figure 14 is a side view of the embodiment of the invention shown in Figures 9-13 in a folded up, carrying condition.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the drawings, a new and improved full-size folding mirror and carry case apparatus embodying the principles and concepts of the present invention will be described.

Turning to Figures 1-4, there is shown a first embodiment of the full-size folding mirror and carry case apparatus of the invention generally designated by reference numeral 10. In the first embodiment, full-size folding mirror and carry case apparatus 10 includes a foldable reflective surface support assembly which includes support panels 16 connected together with panel-interconnection hinges 18. A non-folded reflective surface assembly is supported by the foldable reflective surface support assembly. It is noted that the support panels 16 are folded around the panel-interconnection hinges 18. However, each non-folded reflective surface in the non-folded reflective surface assembly is not folded within itself. Therefore, there are no fold lines in each non-folded reflective surface. Preferably, a handle 24 is connected to the foldable reflective surface support assembly. A shoulder strap 26 can be connected to the foldable reflective surface support assembly. Preferably, a folded condition locking assembly is connected to the foldable reflective surface support assembly for retaining the apparatus in a folded up, carrying condition.

As shown in the first embodiment of the invention, in Figures 1-4, the non-folded reflective surface assembly includes panel-mounted non-folded reflective surfaces 20 mounted one side of each of the respective support panels 16.

The folded condition locking assembly includes a folded condition first locking member 22 which is connected to one of the support panels 16. A folded condition second locking member 28 is connected to another of the support panels 16, such that the foldable reflective surface support assembly is locked in the folded up, carrying condition.

10 To use the first embodiment of the invention, the apparatus is unfolded from the folded up, carrying condition shown in Figure 1. The folded condition first locking member 22 is disengaged from the folded condition second locking member 28. As shown in Figure 2, the right end support panel 16 is rotated as shown by the clockwise unfolding arrow 48 around associated panel-interconnection hinges 18. The left end support panel 16 is rotated as shown by the counterclockwise unfolding arrow 46 around associated panel-interconnection hinges 18.

20 As shown in Figures 3 and 4, the apparatus is in the fully unfolded condition. The three panel-mounted non-folded reflective surfaces 20 shown in the drawings form a full length mirror. The handle 24 can serve an additional function of hanging the fully unfolded mirror on a hook 11 that is supported by a wall or other vertical structure.

When the full-size folding mirror of the invention is to be transported to another location, the apparatus is removed from the hook 11 and folded up into the folded up, carrying condition shown in Figure 1. The folded condition first locking member 22 is engaged with the folded condition second locking member 28 to secure the apparatus in the folded up, carrying condition.

Turning to Figures 5-8, a second embodiment of the invention is shown. Reference numerals are shown that correspond to like reference numerals that designate like elements shown in the other figures. In addition, the non-folded reflective surface assembly includes a roller assembly housing 32 which is
10 connected to the foldable reflective surface support assembly. A roller assembly 34 is retained in the roller assembly housing 32, and a reflective rollable (flexible) non-folded sheet 36 is supported by the roller assembly 34.

The folded condition locking assembly includes a folded up first panel lock member 42 which is connected to the roller assembly housing 32, and a folded up second panel lock member 44 is connected to the foldable reflective surface support assembly.

An extended reflective rollable sheet locking assembly is connected between the reflective rollable non-folded sheet 36 and the foldable reflective surface support assembly. Preferably, the extended reflective rollable sheet
20 locking assembly includes a sheet-attached ring 40 connected to a distal end of the reflective rollable non-folded sheet 36. A support-assembly-attached hook

41 is connected to the foldable reflective surface support assembly. Also, suction cups 30 can be connected to the foldable reflective surface support assembly.

To use the second embodiment of the invention, the apparatus is unfolded from the folded up, carrying condition shown in Figure 5. The folded up first panel lock member 42 is disengaged from the folded up second panel lock member 44, and as shown in Figure 6, the right end support panel 16 is rotated as shown by the clockwise unfolding arrow 48 around associated panel-interconnection hinges 18. The left end support panel 16 is rotated as shown by
10 the counterclockwise unfolding arrow 46 around associated panel-interconnection hinges 18.

As shown in Figures 7 and 8, the apparatus is in the fully unfolded condition. The handle 24 can serve an additional function of hanging the fully unfolded mirror on a hook 11 that is supported by a wall or other vertical structure. Alternatively, the suction cups 30 can be used for supporting the foldable reflective surface support assembly on a wall or other vertical surface.

Once the foldable reflective surface support assembly is in the fully unfolded condition and is installed on a wall or other vertical surface, the sheet-attached ring 40 is grasped, and the reflective rollable (flexible) non-folded
20 sheet 36 is unwound from the roller assembly 34. The reflective rollable sheet 36 is pulled downward to cover the front surfaces of the support panels 16 of

the foldable reflective surface support assembly. The sheet-attached ring 40 is connected to the support-assembly-attached hook 41 to retain the reflective rollable non-folded sheet 36 in the fully extended condition to form a full length mirror.

When the full-size folding mirror of the second embodiment of the invention is to be transported to another location, the suction cups 30 are removed from the wall, the suction cups 30 are removed from the foldable reflective surface support assembly, and the apparatus is folded up into the folded up, carrying condition shown in Figure 5. The folded up first panel lock member 42 is engaged with the folded up second panel lock member 44 to
10 secure the apparatus in the folded up, carrying condition.

Turning to Figures 9-14, a third embodiment of the invention is shown. Reference numerals are shown that correspond to like reference numerals that designate like elements shown in the other figures. In addition, a horizontal-surface-supported mirror support member 50 is provided, and interconnection means are provided for connecting the horizontal-surface-supported mirror support member 50 to a bottommost support panel 16. Preferably, the interconnection means include support-member-to-support-panel hinges 52.

A topmost support panel 16 and a bottommost support panel 16 can
20 include a pair of longitudinal side portions 56. For each topmost and bottommost panel, a transverse portion 58 and a pair of interconnection elbows

60 are connected between the longitudinal side portions 56 and the transverse portion 58. The bottommost interconnection elbows 60 serve as feet members for the apparatus when the apparatus is supported on a floor or other horizontal surface.

The panel-interconnection hinges 18 for successive support panels 16 can be located on opposite sides of the successive support panels 16.

To unfold the embodiment of the invention shown in Figures 9-14, attention is first directed to Figure 14 in which the invention is shown in the folded up, carrying condition. To unfold this embodiment of the invention, the
10 bottommost first panel 62 is rotated around the second panel 64 using the panel-interconnection hinges 18 is connected therebetween in the respective front sides of the respective panels, as shown by the bottommost counterclockwise unfolding arrow 46 in Figure 10. Then, the third panel 66 is rotated around the second panel 64 using the panel-interconnection hinges 18 is connected therebetween in the respective rear sides of the respective panels, as shown by the intermediate counterclockwise unfolding arrow 46 in Figure 10. Then, the topmost fourth panel 68 is rotated around the third panel 66 using the panel-interconnection hinges 18 is connected therebetween in the respective front sides of the respective panels as shown in Figure 10. In this way, all of the support
20 panels 16 are in the fully unfolded condition as shown in Figures 9 and 10.

To use the horizontal-surface-supported mirror support member 50, the horizontal-surface-supported mirror support member 50 is rotated around the support-member-to-support-panel hinges 52 as shown by rotational arrow 70 in Figure 12.

To return the third embodiment of the invention to the extremely compact folded up, carrying condition shown in Figure 14, the reverse of the unfolding steps are carried out.

10 The components of the full-size folding mirror and carry case apparatus of the invention can be made from inexpensive and durable metal and plastic materials.

As to the manner of usage and operation of the instant invention, the same is apparent from the above disclosure, and accordingly, no further discussion relative to the manner of usage and operation need be provided.

It is apparent from the above that the present invention accomplishes all of the objects set forth by providing a new and improved full-size folding mirror and carry case apparatus that is low in cost, relatively simple in design and operation, and which may advantageously be used which has a relatively large reflective surface. With the invention, a full-size folding mirror and carry case apparatus provides a reflective surface which is not folded when the
20 foldable mirror is folded up. With the invention, a full-size folding mirror and

carry case apparatus provides a full-size mirror. With the invention, a full-size folding mirror and carry case apparatus provides for supporting the full-size mirror in a vertical orientation. With the invention, a full-size folding mirror and carry case apparatus provides for supporting the full-size mirror on a hook installed in a wall or other vertical surface. With the invention, a full-size folding mirror and carry case apparatus provides for supporting the full-size mirror with suction cups on a wall or other vertical surface. With the invention, a full-size folding mirror and carry case apparatus provides for supporting the full-size mirror on the floor. With the invention, a full-size folding mirror and carry case apparatus provides a floor support which is also foldable along with the foldable mirror.

Thus, while the present invention has been shown in the drawings and fully described above with particularity and detail in connection with what is presently deemed to be the most practical and preferred embodiment(s) of the invention, it will be apparent to those of ordinary skill in the art that many modifications thereof may be made without departing from the principles and concepts set forth herein, including, but not limited to, variations in size, materials, shape, form, function and manner of operation, assembly and use.

Hence, the proper scope of the present invention should be determined only by the broadest interpretation of the appended claims so as to encompass all such modifications as well as all relationships equivalent to those illustrated in the drawings and described in the specification.

Finally, it will be appreciated that the purpose of the annexed **Abstract** is to enable the U. S. Patent and Trademark Office and the public generally, and especially the scientists, engineers and practitioners in the art who are not familiar with patent or legal terms or phraseology, to determine quickly from a cursory inspection the nature and essence of the technical disclosure of the application. Accordingly, the **Abstract** is neither intended to define the invention or the application, which only is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.